

with the board is provided by an insulating resin that improves adhesion to a material used on a surface of the board.

According to a 40th aspect of the present invention, there is provided an electronic component mounting method as defined in any one of the 25th through 27th and 36th aspects, wherein the insulating resin layer has a portion brought in contact with either the electronic component or the board, the portion being mixed with no inorganic filler.

According to a 41st aspect of the present invention, there is provided an electronic component unit, wherein an electrode of an electronic component is electrically connected to an electrode of a circuit board with a bump formed on the electrode of the electronic component and bonded to the electrode of the circuit board in a state in which the bump is crushed with interposition of an insulating resin layer, in which an insulating resin is mixed with an inorganic filler and hardened, and

the insulating resin layer has a portion brought in contact with either the electronic component or the board, the portion having a smaller amount of inorganic filler than that of the other portion.

According to a 42nd aspect of the present invention, there is provided an electronic component unit,

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wherein an electrode of an electronic component is electrically connected to an electrode of a circuit board with a bump formed on the electrode of the electronic component and bonded to the electrode of the circuit board
5 in a state in which the bump is crushed with interposition of an insulating resin layer, in which an insulating resin is mixed with an inorganic filler and hardened, and

the insulating resin layer comprises: a first resin layer, which is positioned in a portion brought in contact with either the electronic component or the board and in which an insulating resin identical to the insulating resin is mixed with the inorganic filler; and a second resin layer, which is in contact with the first resin layer and is made of an insulating resin whose amount 15 of the inorganic filler is less than that of the first resin layer.

According to a 43rd aspect of the present invention, there is provided an electronic component mounting method as defined in the 5th or 28th aspect,
20 wherein heating is effected from the upper surface side of the electronic component or from the board side or from both the electronic component side and the board side when metallically bonding the gold bump to the electrode of the board with supersonic waves applied.

25 According to a 44th aspect of the present

invention, there is provided an electronic component unit, wherein the electronic component is mounted on the board by the electronic component mounting method defined in any one of the first through ninth, 14th through 17th, 25th through 32nd, 36th through 40th and 43rd aspects.

According to a 45th aspect of the present invention, there is provided an electronic component mounting apparatus as defined in the 11th or 34th aspect, wherein the apparatus for metallically bonding the gold bump to the electrode of the board with supersonic waves applied comprises a heating member for effecting heating from the upper surface side of the electronic component or from the board side or from both the electronic component side and the board side, and the heating is effected by the heating member at a time of metallic bonding.

Brief Description Of Drawings

These and other aspects and features of the present invention will become clear from the following description taken in conjunction with the preferred embodiments thereof with reference to the accompanying drawings, in which:

Fig. 1A, Fig. 1B, Fig. 1C, Fig. 1D, Fig. 1E, Fig. 1F, and Fig. 1G are explanatory views showing a method for mounting an electronic component such as an IC chip on a circuit board according to a first embodiment of the